

Appl. No. : 09/70,540
Filed : January 26, 2001

IN THE CLAIMS:

Please, amend Claim 20 as follows:

1. Withdrawn.

2. Withdrawn.

3. Withdrawn.

4. Withdrawn.

5. Withdrawn.

6. (Previously Amended) A process for fabricating a metal-insulator-metal capacitor on a semiconductor wafer comprising the steps of:

forming a silicon electrode structure on the semiconductor wafer;

making the silicon electrode structure and

replacing the silicon in the silicon electrode structure with a metal, thereby forming a rugged metal electrode.

7. (Previously Amended) The process of Claim 6, further comprising covering the rugged metal electrode with a dielectric layer having a high dielectric constant.

8. (Original) The process of Claim 7, further comprising covering the dielectric layer with a metal layer.

9. (Previously Amended) The process of Claim 6, wherein the step of replacing the silicon in the silicon electrode structure comprises forming a boundary layer on the silicon electrode structure, exposing the silicon electrode structure to a refractory metal-halide complex, and removing the boundary layer.

10. (Previously Amended) The process of Claim 9, wherein the boundary layer comprises a dielectric and the refractory metal-halide complex comprises WF₆.

11. (Original) The process of Claim 7, wherein the dielectric layer comprises a material selected from the group consisting of Ta₂O₅, BaTiO₃, SrTiO₃, Ba_xSr_{1-x}TiO₃, and PbZr_xTi_{1-x}O₃.

12. (Original) The process of Claim 8, wherein the metal layer comprises titanium.

Claims 13-19 cancelled.

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20. (Currently Amended) A method of forming an integrated circuit capacitor on a substrate, the method comprising:

forming a silicon electrode structure on the substrate;

forming a metal electrode having a rugged surface on the substrate by replacing silicon in the silicon electrode structure with metal;

covering said rugged surface with a dielectric; and

covering said dielectric with a second electrode.

21. (Previously Added) The method of Claim 1, wherein the rugged structure of substantially silicon atoms comprises a hemispherically grained silicon structure.

22. (Previously Added) The process of Claim 6, wherein making the silicon electrode structure rugged comprises seeding and annealing to form a hemispherically grained silicon layer.

23. (Previously Added) The method of Claim 20, wherein forming the metal electrode comprises providing a hemispherical grain silicon morphology.

24. (Previously Added) The method of Claim 20, wherein forming the metal electrode comprises forming a rugged silicon layer and converting the silicon layer to metal.